UNITED STATES DISTRICT COURT EASTERN DISTRICT OF MISSOURI EASTERN DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

SIERRA CLUB,

Civil Action No. 4:11-cv-00077-RWS

Plaintiff-Intervenor,

v.

AMEREN MISSOURI,

Defendant.

AMEREN'S MOTION TO MODIFY REMEDY RULING

Ameren Missouri ("Ameren") moves the Court to modify the remedy ruling reflected in its September 30, 2019 Judgment (ECF #1123) and October 22, 2019 Stay Order (ECF #1137) (collectively, the "Remedy Ruling"). In support of this motion, Ameren states as follows:

INTRODUCTION

Today, Ameren announced its intent to retire the Rush Island Energy Center early due to changed circumstances since the Remedy Ruling. Retiring Rush Island early will have a much more beneficial environmental impact, on a far shorter timeframe, than installing wet flue gas desulfurization ("FGD") technology and continuing operations. Retiring Rush Island's two 600 megawatt electric generating units, however, is not a simple matter. Potential grid stability and reliability impacts and other downstream effects must be evaluated, and those issues that are identified must be addressed. The system operator, the Midcontinent Independent System Operator, Inc. ("MISO"), has an established process for reviewing and approving the early

retirement of a generating source, which includes assessment of reliability impacts. MISO's review process for Rush Island's early retirement is already ongoing, and the results of MISO's initial assessment are expected in mid-January 2022.

BACKGROUND

The Court's Remedy Ruling requires Ameren to obtain a Prevention of Significant Deterioration ("PSD") permit and install FGD technology at Rush Island to achieve a sulfur dioxide (SO2) emissions limit that is no less stringent than 0.05 lb SO2/mmBTU on a thirty-day rolling average. (ECF #1123.) The September 30, 2019 Judgment set a compliance deadline of four and one half years (*i.e.*, by March 30, 2024). (*Id.*) The Court's Stay Order thereafter stayed actual construction pending the conclusion of Ameren's appeal in the Eighth Circuit, while requiring Ameren to perform initial engineering tasks and begin the permitting process with the Missouri Department of Natural Resources ("MDNR"). (ECF #1137.)

Ameren has determined that, in light of changes in circumstances since the April 2019 remedy trial, it is in the best interests of both Ameren's customers and other stakeholders to comply with the emission rate required by the Remedy Ruling by retiring Rush Island rather than installing an FGD and continuing operating the plant, with the precise timing of retirement driven by MISO's forthcoming reliability assessment. Ameren announced its determination to retire Rush Island today, December 14, 2021. (See December 14, 2021 Form 8-K of Ameren Corporation and Union Electric Company (Ex. A).) Changed circumstances driving the determination to retire Rush Island include changed forecasts in commodity (natural gas) pricing; the likelihood of future regulation of carbon emissions through a carbon "price;" recent legislative enactments of the Missouri General Assembly; and an increased emphasis on environmental, social, and governance considerations by a wide range of stakeholders. Retirement of Rush Island also will be in the best interest of the general public, as it will reduce emissions of all pollutants, including carbon

emissions, and reduce SO2 emissions to a much greater extent and sooner than would FGD installation and continued operations, resulting in greater environmental benefit than additional decades of operating Rush Island with an FGD.

The early retirement of a generating asset such as Rush Island is a significant and complex undertaking, because, among other reasons, the plant is integral to the stability and reliability of the transmission network and its retirement requires the approval of MISO, which controls the dispatch of the units. To comply with this Court's Remedy Ruling, Ameren will retire both Rush Island units on a timeline to be determined in conjunction with MISO and, in any event, no later than the compliance deadline established by this Court. MISO must evaluate any potential reliability issues—a process that has already begun. MISO may determine that Rush Island is needed for some period as a System Support Resource ("SSR"), and require certain upgrades to the transmission grid to be completed before Rush Island can be retired. If MISO determines that Rush Island is *not* needed for grid reliability purposes, however, then the plant's retirement could occur much more quickly. A preliminary indication of MISO's reliability assessment will come as early as mid-January 2022.

MISO's preliminary study assessment of grid stability and reliability effects from Rush Island's retirement has already been initiated by Ameren's filing of a so-called Y-2 application with MISO on October 20, 2021.¹ Ameren filed this application after analyzing a variety of

¹ See Declaration of Justin Davies ("Davies Decl.") (Ex. B) at ¶ 5. The process before MISO entails two separate steps. An Attachment Y-2 filing triggers a confidential process and leads to a non-binding determination from MISO as to whether the generating asset is required for the reliability of the transmission system. (MISO Tariff §38.2.7(o) (effective Nov. 29, 2021), available at https://www.misoenergy.org/legal/tariff/). An Attachment Y filing must be filed by the resource owner at least 26 weeks prior to changing the status of the resource (i.e., shut down) and triggers a Reliability Study to evaluate the need for the resource to be designated as an SSR. With respect to Rush Island, the underlying technical evaluations for both Attachment Y and Attachment Y-2 filings should be similar, if not identical. A Y-2 filing allowed Ameren to initiate MISO's evaluation prior to publicly announcing the retirement of Rush Island and to accelerate MISO's review period.

possible effects (transmission, voltage support, and grid reliability, among other issues) of Rush Island's retirement on the ability to reliably serve customers. Two potential reliability impacts have been identified by Ameren.

The first reliability issue concerns the regulation of voltage levels on the transmission grid in the St. Louis metropolitan area, an issue that is particularly important during the air-conditioning season. Rush Island provides voltage support to the grid as a transient voltage recovery ("TVR") resource that can help absorb and smooth out sudden voltage spikes that are caused by random transient events that impact the transmission grid. These include events like storms, lightning strikes, high winds, and falling trees that down power lines. Retiring Rush Island will eliminate the considerable amount of TVR support the facility provides; and it is likely that substitute TVR resources will be necessary to make up for the loss of Rush Island. Without adequate voltage support, these random transient events could cause voltage dips or surges that result in wide-spread system outages, in violation of reliability standards required by the North American Electric Reliability Corporation ("NERC"). (Davies Decl. (Ex. B) at ¶¶ 6-8, 10-12.) To avoid such power outages or disruptions, it is possible to install on the transmission grid other devices whose function is to provide TVR support. MISO could require such devices to be installed before it will allow Rush Island to shut down. Ameren preliminarily estimates these substitute TVR devices will cost approximately \$90 million. (*Id.* at $\P\P$ 10, 14.)

The second reliability concern is to ensure grid stability during winter months to prevent cold-weather outages such as those recently experienced during Winter Storm Uri in February 2021. During that storm, unseasonably cold temperatures across the Midwest and South resulted in large outages and transmission emergencies for several system operators, including MISO. At the same time, such extreme cold events have the potential to freeze critical energy infrastructure

(as happened to numerous facilities in Texas). These impacts cause cascading failures, including loss of gas supply, inoperable generating units, and downed transmission lines. (Declaration of Tim Lafser ("Lafser Decl.") (Ex. C) at ¶¶ 2-5; Davies Decl. (Ex. B) at ¶ 15.)

As a result of Winter Storm Uri, reliability standards set by NERC now require more robust generating capacity be made available during "local forecasted cold weather." (Lafser Decl. (Ex. C) at ¶¶ 3-6; Davies Decl. (Ex. B) at ¶ 15.)² In order to mitigate the risk to the St. Louis metropolitan area from an extreme winter event, Ameren believes it is prudent, until Rush Island retires, to operate the plant during the winter months (December – February) to support the grid and to ensure that the units are available to respond instantaneously, should MISO issue a reliability directive to available generators. (Lafser Decl. (Ex. C) at ¶ 5.)³

MISO's Y-2 assessment is expected to be completed in approximately one month. At that time, and subject to MISO's input and approval, Ameren expects to determine the retirement date for Rush Island and if MISO identifies Rush Island to be an SSR and, if so, on the schedule for construction of new TVR resources to address the voltage support issue. If MISO deems them necessary, these TVR projects are expected to cost approximately \$90 million, and to take up to 30 months to complete following formal approval by MISO. (Davies Decl. (Ex. B) at ¶ 14.)⁴ While MISO's modeling analysis incorporates discrete variables, such inputs do not

² See also FERC, NERC and Regional Entity Staff Report, *The February 2021 Cold Weather Outages in Texas and the South Central United States* (Nov. 16, 2021), available at https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and (last accessed Dec. 13, 2021).

³ To operate properly during extreme winter events, the Rush Island units would need to be maintained at a minimum MW load level to ensure availability for instantaneous dispatch by MISO at full levels. (*See* Lafser Decl. (Ex. C) at ¶ 7.)

⁴ MISO has identified a process through which Ameren could seek expedited approval of the specific transmission upgrade projects by December 2022. (See MISO Tariff Attachment FF, available at https://www.misoenergy.org/legal/tariff/.)

necessarily encompass emergency events such as those presented by the unexpected cold temperatures experienced during Winter Storm Uri, and Ameren intends to raise such issues with MISO given that experience and the recent concerns raised by both NERC and the Federal Energy Regulatory Commission ("FERC") regarding grid stability.

DISCUSSION

A. Rush Island's Retirement Will Eliminate All Emissions and Will Be in the Best Interests of the Public and All Stakeholders.

Retirement of Rush Island would eliminate emissions of all pollutants—including carbon emissions—whereas installation of an FGD and continued operation of the plant for at least another 20 to 30 years would result in ongoing emissions. Circumstances bearing on the question of retirement versus FGD installation have changed in several important respects since the Court's Remedy Ruling. For example, as discussed in recent filings in this case and in newspaper articles referenced in those filings, the State of Missouri enacted legislation in July of this year authorizing securitization financing in connection with coal-fired power plants. As reported by the St. Louis Post-Dispatch, this process "could help accelerate closures of financially imperiled coal plants while directing fresh investment toward renewable alternatives." The Post-Dispatch previously reported that this securitization legislation "allows utilities to build renewable energy projects more quickly, generate cheaper electricity, and reduce rates charged to consumers," and, in light of this legislation, environmental groups and other observers have been advocating for Ameren to retire Rush Island in lieu of installing an FGD and continuing to operate the plant. Plaintiff-

⁵ St. Louis Post-Dispatch, "Ameren Reports Earnings Boost from New Investments, Hot Summer Weather," published November 4, 2021, *available at* ECF# 1180 at PageID #63801.

⁶ St. Louis Post-Dispatch, "Experts tell Ameren to dump the scrubbers, close the coal plant," published August 29, 2021, *available at* https://www.stltoday.com/business/local/experts-tell-ameren-to-dump-the-scrubbers-close-the-coal-plant/article_5b7ec5b7-b70c-5973-8cd2-dcded9d1867b.html; St. Louis Post-Dispatch, "Bill looks to enable Missouri power utilities—and their customers—to shift away from coal costs," published April 26, 2021, *available at* https://www.stltoday.com/business/local/bill-looks-to-

Intervenor Sierra Club has urged Ameren to retire Rush Island instead of installing an FGD and continuing operation. (*See* Footnote 8 below.) Sierra Club very recently stated that retirement of Rush Island now "seems like the overwhelmingly sensible option from the economic perspective."⁷

Ameren's integrated resource planning necessarily entails ongoing evaluation of a variety of possible future scenarios, all of which take into account changing market conditions, technology advances, and other circumstances that are not static but instead are constantly changing. In recent months, Ameren has been assessing whether retiring Rush Island would better serve the interests of stakeholders than constructing an expensive FGD and operating Rush Island for decades longer. Ameren has determined that changed circumstances since the Court's Remedy Ruling now mean that installing an FGD at Rush Island would render the plant uneconomical to operate.

During Ameren's 2020 Integrated Resource Plan ("IRP") process before the Missouri Public Service Commission ("PSC"), Ameren, at the PSC's direction, conducted an economic analysis to determine whether it would be more cost-effective to retire Rush Island rather than

 $enable-missouri-power-utilities-and-their-customers-to-shift-away-from-coal/article_1dd4c3aa-90b6-5e8c-90bd-0989afeb8db8.html.$

⁷ St. Louis Post-Dispatch, "Options dwindle for Ameren: Shuttering Rush Island coal plant ever more logical, experts say, published December 3. 2021. available https://www.stltoday.com/business/local/options-dwindle-for-ameren-shuttering-rush-island-coal-plantever-more-logical-experts-say/article 9b74c21f-61a3-5ddb-bd45-99ee3f593207.html. See also id. ("The early retirement outcome may be all the more likely in the wake of recently passed state legislation that could help encourage such a shutdown, and stands to accelerate the shift away from coal power. The policy, called securitization, would cushion Ameren from losses associated with the plant by allowing it to reinvest any stranded costs into other forms of electricity generation—like wind or solar, that will be cheaper for customers and create savings.").

install an FGD.⁸ Ameren's analysis, filed with a Highly Confidential designation pursuant to a Special Protective Order entered by the PSC, concluded that the fixed and operating costs of an FGD significantly exceeded the marginal benefit of operating the plant, rendering Rush Island uneconomical. This updated analysis differed from prior IRP analysis due primarily to shifts in market conditions. Specifically, Ameren projects that natural gas prices will be lower than assumed in prior IRPs, making gas-fired plants more competitive with coal-fired plants. In addition, there has been a steady and growing pressure for federal imposition of carbon pricing which would further negatively affect Rush Island's cost of operations. Lastly, public support for coal-fired generation of electricity has clearly shifted. In recognition of these ever-evolving market, regulatory, and stakeholder forces, Ameren recently announced an accelerated shift toward renewable sources and the de-carbonization of its generation fleet.⁹ Accordingly, in light of these changed circumstances, Ameren has decided to retire Rush Island.

B. Grid Reliability Must Be Ensured before Rush Island's Retirement.

Before retiring Rush Island, and disconnecting the facility from the transmission grid, Ameren is required to seek authorization from MISO. MISO's approval will be based on ensuring that any negative effects on grid reliability caused by the Rush Island retirement are mitigated year-round prior to the effective date of the retirement. Accordingly, upon receipt of the Eighth Circuit's ruling in August, and even though that ruling was subject to requests for rehearing

⁸ See Order of the Missouri Public Service Commission, No. EO-2020-0047 (Oct. 30, 2019) (Ex. D) at Sections 1.D and 1.O. During the IRP process, Sierra Club also suggested to the Missouri PSC that Ameren should analyze "whether ratepayers and shareholders are better off if Ameren retires rather than retrofits Rush Island [with FGD], particularly if Ameren utilizes securitization for the remaining unrecovered Rush Island capital balance." (Sierra Club Suggested Special Contemporary Issues, File No. EO-2022-0054 (Sept. 15, 2021) (Ex. E), pp. 1, 3.) The PSC's Staff asked Ameren to analyze securitization and detail its proposed plans. (Staff Suggestions re: File No. EO-2022-0054 (Sept. 15, 2021) (Ex. F), p. 2.)

⁹ As reflected in its 2020 IRP, Ameren proposes to retire all of Ameren's remaining coal-fired plants by 2042 and to achieve net-zero carbon emissions by 2050. (2020 IRP (Ex. G) at Ch. 1, pp. 1-3.)

(including EPA's request for rehearing, and its request for an extension of time to file its petition for rehearing), Ameren acted expeditiously to consider the current circumstances pertinent to the question of whether to retire Rush Island.

Generating units like Rush Island do more than supply energy (megawatts) to the grid; they also supply additional ancillary services necessary for stable and reliable grid operation, including the critical voltage regulation discussed above. The voltage regulation capability provided by Rush Island smooths out system disturbances that can arise following a sudden spike in system demand or a loss of load. (Davies Decl. (Ex. B) at ¶¶ 7-9.)

These are critical features provided by Rush Island that are needed to support the transmission grid and provide grid stability to the St. Louis metropolitan area. Rush Island serves as a TVR resource whose production is critical during high-temperature, summer air-conditioning season when load levels are highest. To date, because both Rush Island and the Meramec Energy Center are still in service and providing voltage support across the grid, Ameren has not experienced such TVR events or violations of the transmission reliability standards set by NERC. But Meramec is slated to retire in 2022, and now Rush Island will retire as well. Without installation of voltage support equipment on the transmission system to mitigate the loss of voltage support provided by Rush Island and Meramec, TVR events are likely to occur. (Davies Decl. (Ex. B) at ¶ 8-9.)

Not all generation resources can provide the local voltage support that coal plants such as Rush Island do for the St. Louis metropolitan area. This is because reactive power cannot be transferred over long distances. As such, it is not possible for other resources currently in service to provide reactive power to areas of the grid supported by Rush Island. As a greater portion of electricity generation comes from renewable power that is located far away from the demand for

that power (e.g., wind farms in Kansas or Iowa), the issue of voltage support has become one of increasing concern. ¹⁰

As required by NERC standards, Ameren's transmission planning staff have run dynamic models to evaluate the effect of Rush Island's retirement. These models intentionally introduce a "system fault" that simulates a hypothetical transient event occurring during a variety of grid loading conditions. (Davies Decl. (Ex. B) at ¶¶ 3, 6, 8.) Any number of random occurrences could trigger this kind of transient event, such as a lightning strike, a high-wind event, trees or branches falling on transmission lines, or a structure collapse. (*Id.* at ¶¶ 9, 11.)

Under local planning standards required by NERC, system recovery from a transient event must return to an 80% level in 2 seconds, and 90% in 10 seconds. (Davies Decl. (Ex. B) at ¶ 8.)¹¹ Ameren's transmission planners conducted a series of modeling scenarios, evaluating transmission lines and locations across the Ameren Missouri system. Those modeling runs identified reliability risks to the St. Louis metropolitan area, including over 870 potential violations of NERC standards. In one worst-case scenario (involving a transmission line exiting the Labadie Energy Center), models predicted that over 4,000 megawatts of load could be lost. (*Id.* at ¶ 11.)

If MISO agrees that Rush Island's retirement will cause grid reliability problems, then it will be necessary to replace Rush Island's voltage support capacity. (Davies Decl. (Ex. B) at ¶ 10.) Ameren, as the local transmission provider, will need to employ a combination of technologies such as capacitors and reactors, or one or more static synchronous condenser units ("STATCOMs") that—in terms of providing voltage support—function similar to a generator at a

¹⁰ See, e.g., Renewable Energy World, "Grid inertia: why it matters in a renewable world," published October 25, 2019, available at https://www.renewableenergyworld.com/baseload/grid-inertia-why-it-matters-in-a-renewable-world/#gref (last accessed December 13, 2021); Davies Decl. (Ex. B) at ¶¶ 7, 9.

¹¹ NERC Standard TPL-001-4 — Transmission System Planning Performance Requirements, Requirement R5, available at https://www.nerc.com/files/TPL-001-4.pdf.

power plant. (Id. at \P 12.) The type and number of voltage regulation resources needed to mitigate the retirement of Rush Island is subject to approval by MISO. (Id. at \P 13.)

Additionally, Ameren expects MISO to consider the need for Rush Island to remain available during cold-weather months. Recent experience demonstrates the key role Rush Island and similar large plants play keeping the grid stable and functioning when such cold weather strikes. Extreme cold in Texas during Winter Storm Uri froze critical energy infrastructure and resulted in a cascading series of events including loss of gas supply, inoperable generating units, and downed transmission lines. To address emergency energy conditions in Texas, multiple Regional Transmission Organizations ("RTOs") moved power flow in the east and south through MISO's region. This extraordinary flow of power caused an unprecedented amount of congestion on the transmission lines—an overabundance of energy for the infrastructure to manage. This congestion, if not carefully managed, can lead to an overload and a failure of transmission lines. (Lafser Decl. (Ex. C) at ¶¶ 2-3.) Ameren and MISO were able to manage Winter Storm Uri in large measure due to the availability of Rush Island. (Id. at ¶¶ 4-5.)

C. MISO Is Assessing Grid Reliability Issues from Rush Island's Retirement.

In October 2021, after completing its own internal analysis of grid reliability, Ameren initiated discussions with MISO through a preliminary and confidential process known as the MISO "Y-2" process. Through its Y-2 process, MISO is currently running a variety of modeling scenarios to assess the reliability implications of retiring Rush Island. MISO is expected to complete its analysis by mid-January 2022. (Davies Decl. (Ex. B) at ¶¶ 5, 12.)

As part of the Attachment Y process, ¹² if MISO determines that the retirement of Rush Island will cause transmission reliability issues, then MISO can designate Rush Island as an SSR, ¹³ which will require the plant to stay online until appropriate mitigation measures are implemented. In that scenario, Ameren anticipates that MISO will need Rush Island to operate—and provide voltage support—during the May—September air-conditioning season. In preliminary discussions, MISO has indicated to Ameren that if MISO designates Rush Island as an SSR, then the TVR mitigation measures described above (*e.g.*, STATCOMs) could be expeditiously reviewed and formally approved by MISO in December 2022, with informal approval occurring earlier. In addition to the summer voltage regulation issue, reliability problems can arise during extreme cold weather events such as those experienced during Winter Storm Uri in February 2021. (Lafser Decl. (Ex. C) at ¶ 2-4.) Ameren strongly believes that it is in the public interest for Rush Island to be operationally available during the deep winter period should emergency events arise.

If required by MISO, continued operation of Rush Island serves the public interest by ensuring both adequate voltage support necessary for the St. Louis metropolitan area and winter grid reliability support. Transmission upgrades to address reliability concerns will take less time than it would take to install an FGD at Rush Island. In addition, the overall environmental benefit of eliminating all emissions from Rush Island that would have occurred during two or three

¹² As described in Footnote 1 above, the Attachment Y process is the formal process that a generator owner follows in order to officially seek retirement approval from MISO. Generators that initiate the retirement process under Y-2 follow up with an Attachment Y filing (a public process) through which they seek a final determination from MISO. Ameren will make an Attachment Y filing following the conclusion of the Y-2 process.

MISO, as the Transmission Provider, will enter into an SSR agreement with the market participant owning a generation or other resource needed for SSR purposes and will file the SSR Agreement with FERC for approval following the opportunity for comment by interested stakeholders after notice in the federal register. 18 C.F.R. §385.2009. Such public participation process is in addition to any notice by MISO to potentially affected parties and to the comment opportunity provided by MISO on alternative mitigation measures as part of MISO's public planning process. (MISO Tariff, Attachment FF, available at https://www.misoenergy.org/legal/tariff/.)

decades of future planned operation with an FGD far outweighs the effect of deferring—for a limited period—Rush Island's retirement date.

Given the changed circumstances since the Court's Remedy Ruling, the public interest is disserved by the installation of costly FGD controls and the continued operation of Rush Island. The public interest is far better served by Rush Island's early retirement, which is also fully compliant with, and in fact exceeds the goals of, the Court's Remedy Ruling. The public interest is also served by allowing MISO time to conduct its analysis of grid reliability issues before Rush Island's retirement, and if reliability issues are identified, allowing for the installation of substitute TVR or other resources before Rush Island's retirement.

CONCLUSION

For the reasons stated above, Ameren respectfully requests that the Court consider the following framework to address issues presented by Rush Island's early retirement and that the Court modify its Remedy Ruling as set forth below:

- 1. Find that Ameren's retirement of Rush Island in lieu of installing an FGD complies with the SO2 emissions limit required by the Remedy Ruling, with Rush Island's specific retirement date to be determined pursuant to MISO's assessment.
- 2. Direct Ameren to promptly notify the Court and counsel for Plaintiff and Plaintiff-Intervenor of MISO's Y-2 assessment when it is complete.
- 3. If MISO preliminarily determines, as part of its Y-2 process, that Rush Island is not needed to address reliability issues and that Rush Island is not an SSR, then Ameren will file an Attachment Y request with MISO and designate a retirement date.
- 4. If MISO preliminarily determines as part of its Y-2 process that Rush Island is needed to address reliability issues and that Rush Island is an SSR, Ameren will no later than March 1, 2022 file an Attachment Y request with MISO seeking a retirement date as soon as possible. If MISO confirms in the Attachment Y process that Rush Island is an SSR, its retirement date shall not be prior to the date that all transmission upgrade projects (or other measures) needed to remedy the reliability issues that arise from the retirement of Rush Island are constructed and placed in service.

5. If MISO designates Rush Island as an SSR necessary to maintain reliability, authorize Rush Island to operate pursuant to MISO's requirements and the terms of an SSR Agreement with MISO until the retirement date approved by MISO.

Dated: December 14, 2021 Respectfully submitted,

/s/ Matthew B. Mock

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CERTIFICATE OF SERVICE

I hereby certify that on December 14, 2021, I caused the foregoing document to be electronically filed with the Clerk of Court using the CM/ECF system, which will cause an electronic copy to be served on all counsel of record.

/s/ Matthew B. Mock

Matthew B. Mock